CHAPTER 1: QUESTIONS & ANSWERS ABOUT THE ATP

A. GENERAL INFORMATION

1. What is the Advanced Technology Program (ATP)?

The Advanced Technology Program (ATP) began in 1990 to provide cost shared funding to industry to accelerate the development and broad dissemination of challenging, high-risk technologies that promise significant commercial payoffs and widespread benefits for the nation. This unique government-industry partnership accelerates the development of emerging or enabling technologies, leading to revolutionary new products, industrial processes and services that can compete in rapidly changing world markets. The program challenges industry to take on higher risk projects with commensurately higher potential payoff to the nation than they would otherwise. The ATP statutory authority is 15 U.S.C. Sec. 278n (http://www4.law.cornell.edu/uscode/15/278n.text.html). The ATP implementing regulations may be found in 15 CFR Part 295 (http://www.access.gpo.gov/nara/cfr/cfrhtml_00/Title_15/15cfr295_00.html).

2. Who may apply?

A single for-profit company and/or industry-led joint venture. See section B. of this chapter for more details.

3. How can I receive funding?

You must submit a proposal to ATP in response to a solicitation/request for proposals published by ATP. Notices are published in the *Federal Register* announcing the availability of ATP funds.

4. What are the guidelines for preparing an ATP proposal?

Detailed instructions for preparing an ATP proposal are provided in Chapter 2 of this Kit. Proposals submitted will be reviewed under a multiple stage and sequential review process to reduce the amount of information required at one time. Required information may be submitted at different stages as determinations are made by ATP that a proposal has high merit based on the selection criteria. We call these stages in the review process "gates." A proposal must pass through each gate in order to receive funding.

5. How many gates are there in this new proposal submission process?

There are four "gates" as follows:

Gate 1: The proposer submits detailed information to address the scientific and technological merit selection criterion. Additionally, the proposer submits preliminary information to address the selection criterion on the potential for broad-based economic benefits. If the information submitted is determined to have high merit, ATP notifies the proposer and requests that the required additional information be submitted for consideration in **Gate 2**.

Gate 2: The proposer submits more detailed information to address the potential for broad-based economic benefits selection criterion and detailed budget data. If the information submitted is determined to have high merit, ATP notifies the proposer of its selection as a semi-finalist and the proposal proceeds to **Gate 3**.

Gate 3: The proposer is requested to submit required forms and additional documentation, as necessary, and may be invited to NIST for an oral review. If ATP determines, based on all the information received, that the proposal has high merit to be funded, the proposal is considered a finalist and proceeds to **Gate 4**.

Gate 4: Final award processing and issuance, if selected.

6. Will confidential/proprietary information in my proposal be protected?

Yes. Information obtained by ATP or other Department of Commerce offices on a confidential basis on business operations and trade secrets possessed by any company or joint venture will be protected by the government to the full extent of the law. Such information will be withheld from disclosure under the Freedom of Information Act.

7. Where can I seek help with preparing my proposal?

a. Visit ATP's website at http://www.atp.nist.gov/atp/resources.htm which provides links to State agencies and to other resources, both public and private, that can help proposers develop ATP proposals.

b. Visit the **ATP ALLIANCE NETWORK** website at http://www.atp.nist.gov/alliance which provides useful tools for creating and managing R&D partnerships. The website offers interactive forums such as the **Collaboration Bulletin Board,** through which potential proposers can anonymously post their interest in finding a partner, and the **R&D Alliances Forum**, where individuals can exchange their ideas and questions about high-risk R&D alliances.

c. The NIST Manufacturing Extension Partnership (MEP) is a nationwide network of locally managed extension centers whose sole purpose is to provide small and medium-sized manufacturers with the help they need to succeed. The centers provide guidance to high technology companies seeking resources and teaming relationships that help with commercialization efforts. To contact an MEP Center, call 1-800-MEP 4 MFG (1-800-637-4634) or visit MEP's website at http://www.mep.nist.gov.

8. Does ATP hold any public meetings or conferences to assist in proposal preparation?

Yes. ATP holds one or more proposers' conferences. These meetings provide general information regarding the ATP, tips on preparing good proposals, and an opportunity for questions and answers. Proprietary technical discussions of specific proposals should not take place at this public meeting. Attendance is not required, and many successful ATP recipients have not attended a proposers' conference. However, those who have attended have said they found the session helpful. Announcements are published in the *Federal Register*, which provide information regarding the time and place of proposers' conferences.

If you plan to attend a conference, please complete and return the ATP Proposers' Conference Registration Form **(see Exhibit 1)**. Receipt of your advance registration form will assist us in making adequate provisions for attendees.

NIST staff will not critique individual proprietary project ideas during the time they are being developed by a proposer. However, we will at any time answer questions you may have about such things as our project selection criteria, selection process, eligibility requirements, cost sharing requirements, and the general characteristics of a good ATP project.

9. Is there a deadline for submitting an ATP proposal?

Yes. Once an ATP solicitation/request for proposals is published in the *Federal Register*, you may submit your proposal until the date specified in the *Notice*.

10. Where do I submit proposals?

National Institute of Standards and Technology
Advanced Technology Program
100 Bureau Drive, Stop 4701
Administration Building 101, Room A413
Gaithersburg, MD 20899-4701

11. Who should I contact if I have questions?

Barbara Lambis - 301-975-4447 Fax: 301-869-1150 E-mail: barbara.lambis@nist.gov	Questions regarding eligibility and cost sharing requirements, budgets, or other administrative areas.
Bettijoyce Lide - 301-975-2218 Fax: 301-926-9524 E-mail: bettijoyce.lide@nist.gov	Questions regarding the project selection criteria, selection process, or other programmatic areas.
Tryn Stimart - 301-975-8779 Fax: 301-869-1150 E-mail: tryn.stimart@nist.gov	Questions regarding human and/or animal subjects issues.

B. ELIGIBILITY

1. Who is eligible to apply?

Single for-profit companies (pursuant to 15 CFR 295.2, the term company means a for-profit organization, including sole proprietors, partnerships, limited liability companies (LLC), or corporations) and industry-led joint ventures may apply for ATP funding as described below:

a. **Single Company.** A single small, medium, or large for-profit company. (Note: A legal entity such as an LLC is considered a single company.) The single company must be substantially involved in the R&D, with a leadership role in programmatically steering the project, and facilitate definition of the research agenda.

b. **Joint Venture.** At least two separately owned for-profit companies, both of which are substantially involved in the R&D and both contributing towards the cost sharing requirement. Most ATP joint ventures consist of companies who formally agree to collaborate on the R&D and establish an effective plan to commercialize the technology if successful. In addition to two separately owned for-profit companies, the joint venture may include additional for-profit companies and other organizations which may or may not contribute funds (other than Federal funds) to the project and may perform research.

2. Can universities, governmental laboratories, and independent research organizations participate?

Universities, governmental laboratories (excluding NIST laboratories), and/or independent research organizations may participate in an ATP project in the following two ways:

a. As subcontractors to a single company or to a joint venture. (Note that if a subcontractor(s) performs the bulk of the R&D tasks, the proposal stands little chance of being selected.)

b. As additional partners in a joint venture. Any one of these three types of organizations can serve as the catalyst to organize a joint venture. However, of these three organizations, **only an independent research organization may** (i.e., a university or governmental laboratory **may not) submit a proposal on behalf of a joint venture and administer the project** provided that the following two conditions are met:

   (1) As stipulated above, the joint venture includes at least two separately owned for-profit companies, both of which are substantially involved in the R&D and both contributing towards the cost sharing requirement, and

   (2) The joint venture is industry-led, i.e., the industrial partners must be substantially involved in the R&D, with a leadership role in programmatically steering the project, facilitate definition of the research agenda, and commit to the commercialization plans if the technology is successfully developed.

3. Can a foreign-owned company apply for ATP funding?

A **U.S.-incorporated company (subsidiary) of a foreign-owned parent company which is incorporated in another country** may apply if the company meets the conditions in the ATP legislation (15 U.S.C. Sec. 278n.(d)(9) and regulations (15 CFR 295.3). Prior to final award, a foreign eligibility finding will be made by NIST which involves the collection of evidence that the (1) company's participation in the ATP is in the economic interest of the United States; and the country of incorporation of the participant's parent company: (2) affords U.S.-owned companies opportunities comparable to those afforded to any other company to participate in government-funded programs similar to ATP; (3) affords U.S.-owned companies local

investment opportunities comparable to those afforded to any other company; and (4) affords adequate and effective protection for the intellectual property rights of U.S.-owned companies. NIST accepts responsibility for making this finding. Information relating to this finding need not be provided in your proposal other than details of the role of the foreign-owned company in the project.

If your company is neither U.S.-owned nor a U.S.-incorporated company that has a parent company incorporated in another country, your company is **NOT** eligible for ATP funding. A company owned by one or more non-U.S. citizen green card holders, which is not a U.S.-incorporated company with a parent company incorporated in another country, may apply for an ATP award but NO funding can be received by the company unless the ownership issue is resolved consistent with the ATP legislation prior to final award selections. If a proposal submitted by a non-U.S. citizen is selected as a semi-finalist, this issue will be raised at an oral review or earlier to determine whether this issue has been resolved, e.g., the owner has since become a U.S. citizen or ownership has been transferred to a U.S. citizen or citizens. More detailed information on the rules for foreign participation can be found on ATP's website at http://www.atp.nist.gov/eao/ir-6099/contents.htm.

C. FUNDING AND COST SHARING

1. How much funding can I receive and do I have to provide cost sharing?

a. A **single company** can receive up to **$2 million** for R&D activities for up to **3 years**. ATP funds may only be used to pay for direct costs for single company recipients. Single company recipients are responsible for funding all of their overhead/indirect costs. Small and medium size companies applying as single company proposers are not required to provide cost sharing of direct costs; however, they may pay a portion of the direct costs if they wish, in addition to all indirect costs. Large companies applying as single company proposers, however, **must cost share at least 60 percent** of the yearly total project costs (direct plus all of the indirect costs). A large company is defined as any business, including any parent company plus related subsidiaries, having annual revenues in excess of $3.197 billion. (Note that this number will likely be updated annually and will be noted in future annual announcements of availability of funds and ATP Proposal Preparation Kits.)

Now and then a start-up company applying to ATP claims that they have no indirect costs and that the ATP project, if funded, would be the *only* project the company would have; therefore, all costs would be direct. When this assertion is made, it raises two concerns for ATP:

(1) If the company's accounting system has been designed by a Certified Public Accounting (CPA) firm consistent with generally accepted accounting principles, then certain expense items should fall into indirect cost categories, even for a new start up company with only one project. To do otherwise suggests to ATP that either the company is inexperienced about its fiscal affairs or the company has no intent of carrying on any business other than the ATP project -- either of which is of concern to ATP. (For example, at some point the company will begin to engage in commercialization activities which cannot be paid for by ATP.)

(2) ATP projects are supposed to be industry/government cost shared projects. A company proposing to recover 100 percent of the project costs from ATP is violating the spirit of the ATP statute

because the company has no funds of its own at risk. In addition, if the company is not sharing in the risk of the investment with ATP, it gives the appearance that it is not very committed to moving the technology into the marketplace. A proposal claiming no indirect costs, therefore, is unlikely to receive an ATP award.

b. A **joint venture** can receive funds for R&D activities for up to **5 years** with no funding limitation other than the announced availability of funds. Joint ventures **must** cost share **more than 50 percent** of the yearly total project costs (direct plus indirect costs).

If a proposal is selected for funding, the cost sharing amount will be made a part of the award; must meet the criteria stipulated in the administrative requirements of 15 CFR Part 14, *Uniform Administrative Requirements for Grants and Cooperative Agreements with Institutions of Higher Education, Hospitals, other Non-Profit and Commercial Organizations* (http://www.doc.gov/oebam/cfr14.htm); must be allowable under the applicable Federal cost principles; and is subject to audit.

2. How does ATP define cost sharing?

Cost sharing means that portion of project costs not borne by the federal government. Sources of revenue to satisfy the required cost share include cash and in-kind contributions. Cash contributions can be from recipient, state, county, city, or other non-federal sources. In-kind contributions can be made by recipients or non-federal third parties (except subcontractors working on any ATP project) and include but are not limited to equipment, research tools, software, and supplies. Except as specified in CFR 295.25, the value of in-kind contributions shall be determined in accordance with 15 CFR 14.23. The value of in-kind contributions will be prorated according to the share of total use dedicated to the ATP project. ATP restricts the total value of in-kind contributions that can be used to satisfy the cost share by requiring that such contributions not exceed 30 percent of the non-federal share of the total project costs. The allowability of cost sharing costs are determined in accordance with applicable federal cost principles.

3. Can independent research and development (IR&D) funds be used as cost sharing?

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The fundamental expectation for cost sharing is that the proposer's share of the ATP project costs be funded from non-federal sources, such as retained earnings or profit, not funds included as an indirect expense which is subsequently allocated for reimbursement under federally-funded procurement contracts, grants, and other agreements. Recovering the proposer's cost share as part of its IR&D/General & Administrative (G&A) allocation to other federally-funded projects would be contrary to the level of financial commitment expected of proposers by the ATP statute.

Proposers **MAY NOT** classify the non-federal share of the ATP project costs as an IR&D expense that is subsequently allocated, either as a separate cost or as an element of a G&A cost pool, to federally-funded procurement contracts, grants, or other agreements.

Proposers **MAY** allocate IR&D or G&A costs, which include IR&D as an element, to an ATP project, provided that the IR&D/G&A rate applied to the ATP project is a Federally-approved indirect cost rate.

4. Are there any projects ATP will not fund?

a. Straightforward improvements of existing products or product development.

b. Projects that are predominately basic research.

c. Pre-commercial scale demonstration projects where the emphasis is on demonstration that some technology works on a large scale or is economically sound rather than on R&D.

d. Projects involving military weapons R&D or R&D that is of interest **only** to some mission agency rather than to the commercial marketplace.

e. Projects that ATP believes would likely be completed with or without ATP funds in the same time frame or nearly the same time frame.

f. Predominantly straightforward, routine data gathering (e.g., creation of voluntary consensus standards, data gathering/handbook preparation, testing of materials, or unbounded research aimed at basic discovery science), or application of standard engineering practices.

g. Projects that are simply a follow-on or continuation of tasks previously funded in ATP projects from essentially the same proposing team.

5. What types of costs are unallowable?

Regardless of whether they are allowable under the Federal cost principles, the following are unallowable under ATP:

a. Construction of new buildings or extensive renovations of existing laboratory buildings. However, construction of experimental research and development facilities to be located within a new or existing building are allowable provided that the equipment or facilities are essential for carrying out the proposed scientific and technical project and are approved by the NIST Grants Officer.

b. Indirect costs for single company recipients are unallowable for reimbursement with Federal funds and must be absorbed by the company. Note that with large businesses submitting proposals as single company proposers, indirect costs absorbed by the large business may be used to meet the cost sharing requirement.

c. Profit, management fees, interest on borrowed funds, or facilities capital cost of money.

d. Bid and proposal (B&P) costs, tuition costs, marketing surveys or commercialization studies, and general business planning unless they are incorporated into a Federally approved indirect cost rate. (However, a university participating in an ATP project as a subcontractor or as a joint venture partner may charge ATP for tuition remission or other forms of compensation in lieu of wages paid to university students

working on ATP projects only as provided in OMB Circular A-21, section J.41. In such cases, tuition remission would be considered a cash contribution rather than an in-kind contribution.)

e. Single company and joint venture participants may not subcontract to another part of the same company or to another company with identical or nearly identical ownership. Work proposed by another part of the same company or by another company with identical or nearly identical ownership should be shown as funded through interorganizational transfers that do not contain profit. Interorganizational transfers should be broken down in the appropriate budget categories.

6. Will ATP fund research performed outside the United States?

While the ATP is not precluded from funding research performed outside the U.S. by either U.S.-owned or foreign-owned companies/entities (including foreign subcontractors outside the U.S.), the ATP selection criterion used to evaluate how economic benefits must accrue to the U.S. would normally result in proposals involving significant research performed outside the U.S. to be scored low. Additionally, the proposed use of a foreign subcontractor must be justified. This justification must include why the work or services cannot be equivalently performed or obtained in the United States.

D. SELECTION CRITERIA AND SELECTION PROCESS

1. What selection/evaluation criteria are used to select ATP proposals for funding?

As stipulated in 15 CFR 295.6, the evaluation criteria used to select a proposal for funding and their respective weights are listed below. No proposal will be funded unless ATP determines that it has scientific and technological merit and that the proposed technology has strong potential for broad-based economic benefits to the nation. Additionally, no proposal will be funded that does not require Federal support, that is product development rather than high risk R&D, that does not display an appropriate level of commitment from the proposer, or does not have an adequate technical and commercialization plan. **Scoring the full weight of the selection criterion under the Scientific and Technological Merit will not make up for major flaws within the Potential for Broad-Based Economic Benefits selection criterion and vice versa**. Detailed guidance on how to address the selection criteria in your proposal is provided in Chapter 2.

a. **Scientific and Technological Merit (50%).** [*This selection criterion has two critical components: 1) Scientific/Technical Rationale and (2) R&D Plan.*] The proposed technology must be highly innovative. The research must be challenging, with high technical risk. It must be aimed at overcoming an important problem(s) or exploiting a promising opportunity. The technical leverage of the technology must be adequately explained. The research must have a strong potential for advancing the state of the art and contributing significantly to the U.S. scientific and technical knowledge base. The technical plan must be clear and concise, and must clearly identify the core innovation, the technical approach, major technical hurdles, the attendant risks, and clearly establish feasibility through adequately detailed plans linked to major technical barriers. The plan must address the questions of "what, how, where, when, why, and by whom" in substantial detail. The Program will assess the proposing team's relevant experience for pursuing the technical plan. The team carrying out the work must demonstrate a high level of scientific/technical expertise to conduct the R&D and have access to the necessary research facilities.

b. **Potential for Broad-Based Economic Benefits (50%).** [*This selection criterion has three critical components: 1) National Economic Benefits; 2) Need for ATP Funding; and 3) Pathway to Economic Benefits.*] The proposed technology must have a strong potential to generate substantial benefits to the nation that extend significantly beyond the direct returns to the proposing organization(s). The proposal must explain why ATP support is needed and what difference ATP funding is expected to make in terms of what will be accomplished with the ATP funding versus without it. The pathways to economic benefit must be described, including the proposer's plan for getting the technology into commercial use, as well as additional routes that might be taken to achieve broader diffusion of the technology. The proposal should identify the expected returns that the proposer expects to gain, as well as returns that are expected to accrue to others, i.e., spillover effects. The Program will assess the proposer's relevant experience and level of commitment to the project and project's organizational structure and management plan, including the extent to which participation by small businesses is encouraged and is a key component in a joint venture proposal, and for large company single proposers, the extent to which subcontractor/subrecipient teaming arrangements are featured and are a key component of the proposal.

2. How are proposals selected for funding?

All proposals are selected based on a peer-review process, as described in 15 CFR 295.4. Proposals judged through **Gates 1** and **2** to have high merit based on the established selection criteria receive further consideration and are referred to as "semi-finalists." Semi-finalist proposers may be invited to NIST for an oral review **(Gate 3)** of their proposals, and in some cases site visits may be required. Semi-finalist proposals are then ranked, and the Selecting Official selects funding recipients based upon the ranking, the availability of funds, adherence to the ATP selection criteria, and an appropriate distribution of funds among technologies and their applications. NIST reserves the right to deny awards in any case where a reasonable doubt exists regarding a proposer's ability to comply with ATP requirements or to handle Federal funds responsibly. All funding decisions are final and cannot be appealed. NIST reserves the right to negotiate the cost and scope of the proposed work with the proposers that have been selected to receive awards. For example, NIST may request that the proposer delete from the scope of work a particular task that is deemed by NIST to be product development or otherwise inappropriate for ATP support.

3. What are the most common reasons for failure of an ATP proposal?

a. Lack of clear definition of technical barriers which prevent progress on the commercial front. Low-scoring proposals often fail to answer the question "What technical issue is preventing you from exploiting this technology for this class of applications?"

b. Lack of an innovative approach to defeat recognized technical barriers.

c. Lack of detail in the technical plan or failure to clearly describe how the paths to innovation will be accomplished.

NOTE: The deficiencies identified in a. through c. above are evident in proposals that commit simply to work on the technical barriers and provide no evidence of innovation in how these barriers or goals will be

addressed. Your technical approach will be rated inadequate if it is primarily Edisonian (trial-and-error) or if it is based merely on standard engineering or scientific practice.

d. Too general a description of the market opportunity with no specific market segment analysis (size, sales, potential customers, and competitors).

e. Lack of detail on the approach to be taken to commercialize the technology after the ATP project ends, or failure to address market opportunity.

f. Unconvincing case for the need for ATP, or the difference that ATP can make.

E. INTELLECTUAL PROPERTY

1. Who retains title to patentable inventions arising from an ATP-funded project?

Pursuant to the ATP statutory and regulatory authorities, 15 U.S.C. Sec. 278n(d)(11)(A) and 15 CFR 295.2, title to any inventions arising from an ATP-funded project must be held by a for-profit company or companies incorporated or organized in the United States. A university, governmental laboratory, or independent research organization **cannot** retain title to patents, although such organizations can receive mutually agreeable payments (either one-time, or continuing) from the company or companies holding title to the patent. A for-profit corporation organized by a university may be considered a for-profit company for the purpose of retaining title to patents arising from an ATP award. In such cases, documentation of the corporation's for-profit status must be provided in the proposal. If your organization plans to be involved in an ATP project, and if your organization is not a for-profit company, make sure your legal department can accept this provision. The ATP cannot waive this legislatively mandated provision. Title to any such invention shall not be transferred or passed, except to a company organized in the United States, until the expiration of the first patent obtained in connection with such invention.

2. Does the Federal government have any rights to patentable inventions arising from an ATP-funded project?

The United States reserves a nonexclusive, nontransferable, irrevocable paid-up license, to practice or have practiced for or on behalf of the United States any patentable invention arising from an ATP award, but shall not, in the exercise of such license, publicly disclose proprietary information related to the license. Additionally, the Federal government has march-in-rights in accordance with 37 CFR 401.14(j).

F. HUMAN AND ANIMAL SUBJECTS

1. Will ATP fund projects involving human subjects?

Yes. Research involving human subjects must be in compliance with applicable federal regulations and NIST policies for the protection of human subjects. Human subjects research involves interactions with human subjects or data, images, tissue and/or cells/cell lines (including those used for control purposes) from human sources. Research involving human subjects may include activities such as the use of image and/or audio recordings of people, taking surveys or using survey data, using databases

containing personal information, and many tasks beyond those within traditional biomedical research. Detailed information regarding the use of human subjects involved in research and required documentation may be requested by calling ATP toll free at 1-800-287-3863 or by visiting ATP's website at http://www.atp.nist.gov.

2. We are not a biotech company; does our research involve human subjects?

It could. Manufacturing, electronic, and information technology projects may utilize human subjects in research that falls within the regulations. The use of human subjects in research is not limited to biological-based studies; there are numerous examples of non-medical research proposals that may utilize human subjects or data with personal information about people. For example, a computer software company may propose to have a new web-based curriculum reviewed by a group of volunteers and solicit feedback on such things as usability, design and content. The use of certain types of volunteers to review the web-based system (or the curriculum in a software format) may constitute the use of human subjects as defined in Federal regulations. This type of research will require the submission of certain documents to NIST.

3. Will ATP fund projects involving animal subjects?

Yes. Research involving animal subjects must be in compliance with applicable Federal regulations and NIST policies for the protection of animal subjects. Vertebrate animal (e.g., mammals, birds, fish, etc.) research involves animals that are being cared for, euthanased, or used by the project participants to accomplish research goals, teaching, or testing. The regulations do not apply to animal tissues purchased from commercial processors or tissue banks, or to uses of pre-existing images of animals (e.g., a wildlife documentary, or pictures of animals in newscasts, etc.). Detailed information regarding the use of animal subjects involved in research and required documentation may be requested by calling ATP toll free at 1-800-287-3863 or by visiting ATP's website at http://www.atp.nist.gov.

CHAPTER 2: GUIDELINES FOR PREPARING ATP PROPOSALS

(***NOTE: Proposals that deviate substantially from these guidelines or that omit substantial information may be found unresponsive and may not be considered for funding.)***

A. PROPOSAL FORMAT

The following format must be followed for submission of the initial proposal, as well as subsequent proposal-related documents from the proposer.

1. **Bindings.** Bind each of the required bound copies of the proposal securely. Bindings which permit the proposal to lie flat while being read are preferred. Loose-leaf ring binders are **NOT** acceptable.

2. **Double-Sided Copy.** Print on both sides of the paper (front to back counts as two pages).

3. **Facsimile (FAX) Submissions.** Proposals, late documentation, errata sheets, etc., submitted by facsimile (fax) will not be accepted.

4. **Figures and Diagrams**. If your originals are in color and you are submitting black and white copies, make sure plots are still understandable and plot lines are differentiable and identifiable.

5. **Font.** Use an easy-to-read font (e.g., Times New Roman, **12 point**) minimum.

6. **Line Spacing.** Use normal default line spacing, i.e., a minimum of single space.

7. **Margins.** Use **one inch** top, bottom, left, and right margins.

8. **Number of Copies.** Provide an original signed bound proposal plus 15 (1 unbound and 14 bound) copies for a total of 16 copies.

9. **Page Limit.** Page limits for the different parts of a proposal are stipulated in **Exhibit 2**.

10. **Page Numbering**. Number pages sequentially.

11. **Paper Size.** Use 21.6 x 27.9 cm (8½ x 11 inch) paper.

12. **Proposal Language.** Proposals must be written in English.

13. **Table of Abbreviations.** Include a table which defines abbreviations likely unfamiliar to the reader. You do not need to define common abbreviations, e.g., U.S. for United States, ATP for Advanced Technology Program, DoD for Department of Defense, cm for centimeter, etc.

14. **Table of Contents.** A table of contents is not required.

15. **Typed Document.** Proposals must be typed. Handwritten proposals will be rejected.

16. **Usage of Metric/System International (SI) Units.** Use metric/SI units; however, English units may be put in parentheses.

B. ELECTRONIC PROPOSAL SUBMISSION

ATP is now accepting proposals submitted electronically via ATP's Electronic Submission System. To be accepted, the proposal must have a valid ACES digital signature, and the attachment (proposal narrative) must be readable in one of the formats described on the Electronic Submission System website (http://webguy.nist.gov). Details about how to submit electronically, including

- how to get an ACES Digital Certificate;
- operating system, hardware and software requirements;
- downloads; and
- instructions

are available at http://webguy.nist.gov. Font, line spacing, margin, page limit, page numbering, and page size requirements stipulated in section A. of this chapter still apply.

The due date for submission of electronic proposals is stipulated in the competition announcement published in the ***Federal Register***. A proposal will not be considered to be received unless it has a valid ACES digital signature and the attachment (proposal narrative) is readable in one of the formats described on the Electronic Submission System website (http://webguy.nist.gov), and is submitted by the published deadline.

C. PROPOSAL FORMS AND OTHER DOCUMENTS

The following forms and other documents are required in order to be considered for funding. Please note that they are not all required at the time of initial proposal submission. The stages for submission of the documents are noted below and summarized in **Exhibit 2**. All of the required forms with instructions are included in this Kit as tear-out pages **(see Exhibits)**. As noted, some forms are required from single company proposers only, some from joint ventures only, and some from both.

1. **Single Company Only**.

a. **Form NIST-1262 Pages 1 & 2** - Single Company Advanced Technology Program Proposal Cover Sheet **(see Exhibit 3)** must submitted at the time of initial proposal submission (**Gate 1**) . **Page 1 of this form serves as the cover for the proposal; therefore, no other cover should be included**. Use the list of ATP Technology Area Codes included in this Kit **(see Appendix A)** to complete item 2 on this form. The authorized company representative who signs the form must have delegated fiduciary authority. By signing this form, the company representative certifies the company's commitment to pay all indirect costs and, if included as additional cost share, any direct costs; verifies

the certification statements on the form; and verifies the accuracy of the proposal. The signature also signifies that the company representative has coordinated with top management within his/her own company about their commitment to the proposed project. Additionally, by signing the form, the company representative acknowledges that the proposal is being submitted with the agreement that NIST may use non-Government reviewers, if necessary. (Such reviewers are screened to eliminate conflicts of interest and must sign non-disclosure statements.)

b. **Form NIST-1262 Page 3** - Estimated Multi-Year Budget - Single Company **(see Exhibit 4)** must be submitted at the time of initial proposal submission (**Gate 1**). Items completed must reflect estimated costs for each year of the proposed project, as well as totals for the entire project.

c. **Form NIST-1262 Page 4** - Subcontracts **(see Exhibit 5)** must be submitted at the time of initial proposal submission (**Gate 1**).

2. **Joint Venture Only**.

a. **Form NIST-1263 Pages 1 & 2** - Joint Venture Advanced Technology Program Proposal Cover Sheet **(see Exhibit 6),** must be submitted at the time of initial proposal submission (**Gate 1**). **Page 1 of this form serves as the cover for the proposal; therefore, no other cover should be included.** Use the list of ATP Technology Area Codes included in this Kit **(see Appendix A)** to complete item 2 on this form. The authorized company representative who signs the form must have delegated fiduciary authority. By signing this form, the company representative certifies the commitment of cost sharing, verifies the certification statements on the form, and verifies the accuracy of the proposal. The signature also signifies that the company representative has coordinated with top management within his/her own company and all companies/organizations described as joint venture partners about their commitment and cost sharing to the proposed project. Additionally, by signing the form, the authorized company representative acknowledges that the proposal is being submitted with the agreement that NIST may use non-Government reviewers, if necessary. (Such reviewers would be screened to eliminate conflicts of interest and will sign non-disclosure statements.)

b. **Form NIST-1263 Page 3** - Estimated Multi-Year Budget - Joint Venture **(see Exhibit 7)**, must be submitted at the time of initial proposal submission (**Gate 1**). Items completed must reflect estimated costs for each year of the proposed project as well as totals for the entire project.

c. **Form NIST-1263 Page 4** - Other Joint Venture Participants **(see Exhibit 8)**, must be submitted at the time of initial proposal submission (**Gate 1**) to identify the joint venture participants (excluding the organization submitting the proposal).

d. **NIST-1263 Page 5** - Subcontracts **(see Exhibit 9)**, must be submitted at the time of initial proposal submission (**Gate 1**).

e. **Joint Venture Agreement** must be submitted in draft (unexecuted) prior to an oral review (**Gate 3**) so you should be thinking about negotiating this agreement as you write the proposal. The draft Joint Venture Agreement must include at a minimum:

1) Authorization for one of the joint venture participants (a legal entity, not an individual person) to bind all of the other participants to the terms and conditions of the NIST award and to administer the NIST award on behalf of all of the participants;

2) Treatment of intellectual property, i.e., who will own what, including provisions granting the required licenses to the government; and

3) Agreement that the ATP award terms and conditions take priority over Joint Venture Agreement terms and conditions.

Although the draft Joint Venture Agreement need not be signed at the time of an oral review, it must be finalized and signed by all joint venture participants before an award can be made. For your convenience, we have developed a sample Joint Venture Agreement and Intellectual Property Plan for your use, which may be requested by calling ATP toll free at 1-800-287-3863 or by visiting ATP's website http://www.atp.nist.gov**.** The sample Joint Venture Agreement includes important information; however, it is not meant to be a sole Joint Venture Agreement model. If a joint venture wants to develop its own Joint Venture Agreement, it may do so, provided the minimum provisions mentioned above are included.

Based on feedback from companies involved in ATP, some issues that are most often raised by the companies' legal counsel in negotiating the joint venture agreement include:

1) Who will hold title to intellectual property?
2) How are revenue streams to be divided?
3) What indemnification provisions will be acceptable to all parties?
4) Who will be the spokesperson for the joint venture?
5) Who authorizes licensing agreements?
6) Who handles the billing to NIST and brings issues to NIST's attention?
7) What will happen during the course of the project if one party drops out and/or another party wishes to join?
8) Who will coordinate writing the quarterly reports to NIST?
9) Who will track progress against technical milestones to bring issues to the attention of the joint venture and NIST?
10) In what capacity is a governmental laboratory participating? If as a joint venture partner, is the governmental laboratory willing to execute the joint venture agreement? (NOTE: If not willing to execute the joint venture agreement, the governmental laboratory may participate as a subcontractor under a separate agreement (e.g., a CRADA) with the joint venture administrator.)

While each joint venture can write its own Joint Venture Agreement, there are certain provisions noted in the Kit to which all joint venture partners **MUST** agree before ATP can make an award. For example, ATP's legislation states that title to intellectual property developed with ATP funds must be held by a company or companies incorporated in the United States.

Before investing a large effort in planning technical work for a joint venture, companies are urged to obtain a legal review of the sample Joint Venture Agreement in this Kit by all participants. If it appears

likely that the kinds of provisions contained in the sample Joint Venture Agreement will be contentious, we urge you to consider very carefully whether the joint venture is feasible. If there are questions, your legal staff may contact the Office of the NIST Counsel at 301-975-2803.

We strongly recommend that the person who signs the ATP proposal be someone at a high enough level of the company to be able to deal effectively with the kinds of legal and policy concerns that are necessary to execute a successful Joint Venture Agreement. It is often helpful if this same individual signs the Joint Venture Agreement on behalf of the company if the project is selected for funding. This individual must coordinate with top management within his/her own company and participating companies/organizations about their commitment and proposed cost sharing to the proposed project.

3. **Single Company and Joint Venture**.

a. **Standard Form 424B**, Assurances - Non-Construction Programs **(see Exhibit 10)**, must be submitted prior to an oral review (**Gate 3**). The authorized company representative who signs the form must have delegated fiduciary authority. By signing this form, the company representative certifies compliance with the standard assurances. **NOTE:** If a joint venture proposal is selected as a semi-finalist, the SF 424B must be completed by each of the other joint venture participants and submitted to ATP prior to an oral review (**Gate 3**).

b. **Form CD-511**, Certifications Regarding Debarment, Suspension and Other Responsibility Matters; Drug-Free Workplace Requirements and Lobbying (**see Exhibit 11**), must be submitted prior to an oral review (**Gate 3**). All financial assistance proposers must certify that they: are not suspended or debarred from participating in Federal programs, will provide a drug-free workplace, and have not or will not use Federal appropriated funds to engage in prohibited lobbying activities. **NOTE:** If a joint venture proposal is selected as a semi-finalist, the Form CD-511 must be completed by each of the other joint venture participants and submitted to ATP prior to an oral review (**Gate 3**).

c. **Standard Form LLL**, Disclosure of Lobbying Activities (**see Exhibit 12**) must be submitted prior to an oral review (**Gate 3**) if the proposer engages in lobbying. The Form CD-511 defines the circumstances under which this additional reporting requirement applies. Read the Form CD-511 to determine if you are required to submit the Standard Form LLL. **NOTE:** If a joint venture proposal is selected as a semi-finalist, the Form SF-LLL must be completed by the other joint venture participants, if applicable, and submitted to ATP prior to an oral review (**Gate 3**).

d. **Form CD-346**, Applicant For Funding Assistance **(see Exhibit 13)** must be completed by the appropriate personnel and submitted prior to an oral review (**Gate 3**). The following individuals are required to complete the form:

1) Technical and business project managers
2) Chief financial manager

3) Key officer who will have fiduciary responsibility for the award or who has authority to speak for and/or commit the recipient in the management of the award and/or expend funds
4) Grant/Contract Manager

This information is used to conduct a name check on the key individuals to determine whether there is any criminal or adverse finding which would have a negative effect on their participation in the award. Officials of state, local governments, accredited colleges, and universities acting on behalf of their respective entities in applying for assistance are exempt from the name check requirement. Additionally, elected officials of state and local governments who are serving in capacities other than their elected capacities when applying for assistance are exempt.

D. EXECUTIVE SUMMARY

A one to two page Executive Summary briefly highlighting the major sections of the Project Narrative must be submitted at the time of the initial proposal submission (**Gate 1**). The summary should address the ATP selection criteria detailed in section D of this chapter as follows:

1. Scientific and Technological Merit
   - Technical Rationale
     -- Technological Innovation
     -- High Technical Risk and Feasibility
   - R&D Plan

2. Potential for Broad-Based Economic Benefits
   - National Economic Benefits
   - Need for ATP Funding
   - Pathway to Economic Benefits

E. PROJECT NARRATIVE

The project narrative in the initial proposal submission must provide detailed information to address the scientific and technological merit selection criterion and include preliminary information to address the potential for broad-based economic benefits selection criterion **(Gate 1)**. If ATP determines that the information in the initial proposal has high merit, the proposal will proceed to **Gate 2** of the review process, and the proposer will be notified by ATP to provide more detailed information to address the potential for broad-based economic benefits selection criterion **(see Appendix B)**. This revised proposal submission process is designed to reduce the burden on our proposers. The project narrative (both detailed information to address the scientific and technological merit selection criterion and the preliminary information to address the potential for broad-based economic benefits selection criterion) required in your initial proposal is limited to a total of **24 pages** for a single company and **35 pages** for a joint venture (**see Exhibit 2)**.

1. **Scientific and Technological Merit:** Detailed information must be provided with your initial proposal to address this selection criterion. This detailed information required with your initial

proposal submission should be no more than **20 pages** for a single company and **30 pages** for a joint venture, out of the total page count of 24 and 35 respectively.

Describe the technical aspects of your project. Explaining what you will do, how you will do it, when, where, and why. The scientific and technological merit is determined by assessing the innovations in the technology, technical risk and feasibility, and the quality of your research and development (R&D) plan. The proposed technology must be highly innovative. The research must be challenging, with high technical risk. It must be aimed at overcoming an important problem(s) or exploiting a promising opportunity. The research must have strong potential for advancing the state of the art and contributing significantly to the U.S. scientific and technical knowledge base. The project team must be qualified to conduct the R&D and must have access to the necessary research facilities.

The technical narrative should clearly communicate both the technical barriers or challenges that your project will tackle and your innovative solution(s) to overcoming these barriers. One approach that works well is to summarize these two points in the previous Executive Summary in a couple of paragraphs and/or bullet points, followed by a more detailed narrative (described below) that provides the rationale supporting your assessment of high technical risk, innovation and feasibility of approach.

In the end, the narrative should provide a reviewer who is reasonably skilled in the associated, technical field(s) with enough information to answer the following questions:

a. What is the level of technical risk involved in your proposed work?
b. What is the amount of novelty/innovation inherent in reaching your proposed solution(s)?
c. How will the project team handle the technical/managerial problems that they will likely encounter?

Many successful proposals discuss the first two questions in one section (*Technical Rationale*) and address the last question in a separate section (*R&D Plan*).

Technical Rationale. State and quantify the technology development targets of the project. Discuss how the attainment of these targets will deliver all the technical capabilities that will be needed to realize the economic benefits described in the economic section of your proposal.

Describe the technical challenges and assess the probability of success of the project approach(es). Characterize the major technical tasks with respect to technical risk, and highlight the high technical risk tasks. "High technical risk" is understood to mean *embodying technical challenges that display significant recognized uncertainty of success by experts in the field(s).* Risk may be high in developing one or more single innovations, integrating technologies, or both. The ATP expects that in high technical-risk projects, surmounting the technical challenge should result in a dramatic change in the future direction of technology. (Remember that the mission of ATP is to help companies overcome high-risk technical barriers, where potential economic benefits are large.)

You must demonstrate that your technical approach is feasible. Feasibility is assessed by whether or not there is a sound scientific foundation or rationale for the proposed approach, based on early research results, research evidence in the open literature or sound theoretical thinking. The ATP will not fund ideas that have no scientific basis or plausibility, or projects that are predominantly basic discovery science. **Note:** See page 6 of this Kit for additional restrictions.

Your proposal must convince reviewers that your project involves a high degree of innovation. Innovation may relate to the objectives of research, or to the approach to achieving those objectives; that is, innovation may be in **what** you want to accomplish, as well as in **how** you intend to do it. Identify key technical barriers that stand in the way of developing or exploiting the new technology, and show that your approach to overcoming those barriers is particularly innovative relative to alternative approaches being pursued by your foreign and domestic competitors. Ignoring the existing body of knowledge and on-going work by others may cause reviewers to assume that you are not knowledgeable about existing work or that your work may duplicate existing efforts.

Projects with high technical risk and innovation offer the potential for leveraging advancements into other technical arenas. Explain how your technical targets compare to the state of the art and current industry practice against a clear baseline from which you are starting. This explanation will tend to be a summary of the technical risk and highlight the need for significant innovation to have a broad impact in the economy. You are strongly encouraged to summarize your targets, the key technical variables associated with your approach, the technical barriers, and your innovative approaches in a table. An example of a table format highlighting possible variables from three different types of projects follows for your convenience:

Key Variables*	Project Technical Targets	Current Practice	Associated Barriers	Innovative Approaches
catalyst selectivity	95%	25%	side conversion to acetaldehyde	new metallocene
% of speech recognized	99.9%	70%	range of pronunciations	new approach to recognizing inflection
non-invasive glucose sensor	improved accuracy and precision over current method metrics	invasive *in vitro* methods	calibration and reliability	non-invasive *in vivo* device

***NOTE:** Most projects have several key variables, not just one.

Estimate how far along your technology development will be at the end of the ATP project relative to where you predict your competition will stand at that same time. (Note that this will emphasize the competitive situation from a technical perspective, whereas the potential for broad-based economic benefits information in your proposal will address the competitive situation from a business perspective.)

Summarize the impact, or technical leverage, of overcoming the high technical risks with your proposed innovation(s). Technical leverage is understood to mean that an advance in one area of technology will have a larger impact on other areas of technology, or on a broad spectrum of technology applications. Will the project contribute to the U.S. technology base even if it is not completely successful either technically or commercially? In what ways? How will you facilitate the diffusion of impacts to other technology areas?

R&D Plan. Since your proposal (if funded) essentially becomes the basis for your "statement of work," a good R&D plan is critical for maintaining best practices in project management. Many unsuccessful proposals have emphasized meritorious technical goals and provided only a vague roadmap on how to get there. The technical plan should explain **how** you intend to reach the technical objectives, should address all the anticipated technical problems, and should describe how these problems will be handled. With respect to technical merit, the most common reason for failure of ATP proposals is that the R&D plan is not described in enough clarity or with enough detail for reviewers to assess the degree of innovation in the proposed tasks. It is not adequate simply to describe the established technical barriers and provide only an overview of the research path using standardized methodologies of scientific or engineering practice.

Discuss how the proposed work will be organized into tasks and subtasks. Describe how the tasks and subtasks are interrelated. Clearly link tasks to the budget. Explain the technical rationale for the major tasks and describe, in a quantitative manner, the approaches to be followed to generate, test, and interpret information. Provide sufficient detail. For example, do not simply say, "We will measure the properties of the key materials." What materials? What properties? Over what range of variables? Using what techniques? How will data be used in achieving the goals?

Clear metrics for measuring interim progress toward the project's final overall technical goals are required. This includes providing appropriate interim milestones with quantified metrics of success. Quantifiable metrics for a reasonable number of key milestones is required. Milestones without quantified metrics must include clearly measurable deliverables. The results from a single milestone or a group of milestones may be the basis for a key decision point strategy ("If this happens, we will do A, but if that happens, we will do B.") A "go/no-go decision point" is typically a point where, a particular task, set of tasks, or the whole project may need to end based upon a particular set of significant research results. A "choice point decision" is typically a point where a decision needs to be made to choose starting a particular alternative approach over another, or to downselect between parallel approaches (e.g. ending an approach while continuing another). Decision points and the basis for choosing between alternatives at the decision point should be clearly described. Decision points which could result in a change in the R&D plan that significantly lowers the overall technical risk profile or technical innovation of the project are discouraged. Alternative approaches that are proposed at decision points will be evaluated against the technical selection criterion. Finally, the chronological relationship of tasks, subtasks, milestones and decision points should be illustrated in a Gantt chart or table such as the figure below. **Remember that a Gantt Chart or table alone is not enough. The tasks must be described in narrative form and it must be clear how the goals of the project will be achieved through those tasks.**

Figure: Project Plan, Milestones, and Budget

Major Project Tasks	Project Time					Total Funds $K	Major Milestone Description & Metrics
	Y1	Y2	Y3	Y4	Y5		
Task 1 Description Subtask a Subtask b	"					$K	" Complete test procedures for .....
Task 2 Description Subtask a Subtask b			" (1)	" (2)		$K	" (1) Demonstrate x% improvement of y. " (2): Validate accuracy of z to within w% .
Task 3 Description Subtask a Subtask b			"			$K	" Characterize properties A, B, ..N of material Q
Task 4 Description Subtask a Subtask b					"	$K	" Validate accuracy of C to within K% ..

Task 5 Description Subtask a Subtask b					"	$K	": Complete test procedures for ... validate....
Funding Totals	$K	$K	$K	$K	$K	$K	

For each year, **provide a brief statement of the project's anticipated, overall accomplishments**. These accomplishments should characterize what objectives the company needs to achieve in order to maintain a high level of commitment to the project. These annual accomplishments should **briefly** (2-3 sentences maximum) define how the project would have benefits to the taxpayer by funding year should additional out-year funding not become available. The statement of accomplishments may take the form of a description of how the state of the art will be extended by the end of the year, or of the technical capabilities required to keep the project on track toward achieving the overall end-of-project goals.

If a project is selected for funding, annual accomplishments and milestones can be modified, based on the research results if the adjustments are consistent with the project goals originally proposed. If there are especially critical decision points where you will reassess your willingness to continue the project, indicate those points and the conditions or metrics under which you would want to withdraw and end the project.

Describe how the plan will foster a team approach and ensure effective communication among team members. Show how your R&D team will be aware of and take into account views and constraints of suppliers, considerations of manufacturability, requirements of customers, regulatory concerns, safety issues, environmental impacts, etc. Describe how all of the necessary scientific, engineering, and business disciplines will be brought into the R&D planning. Discuss how you will ensure that the cross-disciplinary knowledge and capabilities required for the project's success will be available when needed. Discuss special issues such as workforce training requirements associated with the new technology, environmental impact, or regulatory issues.

Discuss the technical qualifications and experience of technical personnel and describe critical facilities and equipment necessary for conducting the R&D work. Briefly highlight education and experience of key technical personnel. If your proposal passes **Gate 1**, a more detailed discussion of technical staff and facilities and equipment will be required in your **Gate 2** proposal under *Experience and Qualifications*.

2. **Potential for Broad-Based Economic Benefits.** The preliminary information required in your initial proposal to address the potential for broad-[redacted]enefits selection criterion is limited to the questions below. **If your initial proposal is determined by ATP to have high merit, your proposal will advance to Gate 2 and you will be notified by ATP to submit more detailed information to address this selection criterion (see Appendix B) and given a reasonable time period to prepare your submission. Do not provide the detailed Gate 2 information in your initial proposal Gate 1 submission. Although you are not required to provide the detailed**

information in the initial proposal submission, you are strongly encouraged to begin preparing this information to ensure that sufficient time is allocated to finalize it and obtain required approval(s) within your organization to submit it to ATP when it is due. The preliminary information required below with your initial proposal submission should be no more than **four pages** for a single company and **five pages** for a joint venture, out of the total page count of 24 and 35, respectively.

National Economic Benefits

a. What business opportunities does the proposed technology address and why are they of economic importance to the proposer? To the nation broadly? Explain how successful pursuit of these opportunities will benefit your customers, competitors and/or others in your industry, end users, other industries, and the general public.

b. What is the business/economic advantage of the proposed technology over current ways or incremental plans to resolve the same problems or needs your technology will address? If possible, describe and quantify the magnitude of improvement over current approaches and how this improvement enables commercial and national advantage.

c. Who are the potential users of the technology? How big are the markets currently and what are their growth trends? How might the markets change if the proposed technology were available?

Need for ATP Funding

a. What efforts have you made to get internal funding and/or external private financing? (**Note:** 'None' is not a satisfactory answer.)
b. How will ATP funding change the scope, scale, and/or timing of your research effort in this technical area?

Pathway to Economic Benefits

a. Briefly describe your initial target application and your commercialization strategy for bringing the technology into the marketplace, including any use of strategic alliances.

b. Briefly describe how the technology will be broadly diffused.

c. Describe the business experience of the company and staff.

F. BUDGET NARRATIVE (BUDGET DATA)

As stated earlier in this Kit, Form NIST-1262, pages 1-4, or NIST-1263, pages 1-5, are required in your initial proposal submission **(Gate 1)**. If your initial proposal is determined by ATP to have high merit to warrant further consideration, a detailed budget narrative (budget data) will be required along with the more detailed

information to address the potential for broad-based economic benefits selection criterion **(Gate 2)**. The required budget data worksheets are included in this Kit **(see Exhibit 14)**.

APPENDIX A: ATP TECHNOLOGY AREA CODES

BIOTECHNOLOGY

B0100 - Animal & Plant Biotechnology
B0200 - Biomolecular & Biomimetic Materials
B0300 - Bioprocessing/Biomedical Engineering
B0400 - Bioinformatics
B0600 - Diagnostic and Therapeutic Biotechnology
B0700 - Marine Biology
B9900 - Other Biotechnology

ELECTRONICS/COMPUTER HARDWARE/ COMMUNICATIONS

E0100 - Semiconductors
E0200 - Electronics Systems
E0300 - Microelectromechanical Technology
E0500 - Computer Hardware
E0600 - Microelectronic Fabrication Technology
E0700 - Communication for Data, Voice, Video
E0800 - Electronic Instrumentation/Sensors & Control Systems
E0900 - Optics & Photonics
E9900 - Other Electronics

INFORMATION TECHNOLOGY

I0200 - Computer Systems and Software Applications
I0300 - Computer-Aided Design and Testing Systems
I0400 - Imaging & Image Processing
I0500 - Cognitive Systems
I0600 - Pattern Recognition
I0700 - Internet Infrastructure
I0800 - Security & Biometrics
I9900 - Other Information/Computers/ Entertainment

MANUFACTURING (DISCRETE)

M0100 - Automobile Manufacturing
M0200 - Aircraft Manufacturing
M0300 - Other Transportation Manufacturing
M0400 - Intelligent Control
M0500 - Machine Tools
M0700 - Materials Handling
M0800 - Intelligent Manufacturing
M0900 - Avionics
M9900 - Other Discrete Manufacturing
N0300 - Energy Conversion (Motors, Generators, etc.)
N0500 - Energy Generation/Distribution

ADVANCED MATERIAL/CHEMICALS

A0500 - Abrasives, Adhesives, Ceramics, Coatings, and Composites
A0600 - Computer-Based Design of Chemical/ Materials
A0800 - Polymers Synthesis & Polymer Fabrication Technologies
A1000 - Metals & Alloys
A1200 - Building/Construction Materials
A9900 - Other Materials
H0100 - Separation Technology
H0200 - Catalysis/Biocatalysis
H1500 - Food Processing and Preservation
H9900 - Other Continuous Manufacturing (Pulp/Paper, Textiles)
N0200 - Energy Resources/Petroleum
N0400 - Energy Storage/Fuel Cell, Battery
N0600 - Environmental Technologies

OTHER

Z0000 - Technology Area Code Not Listed Above

APPENDIX B: REQUIRED DETAILED INFORMATION TO ADDRESS ATP SELECTION CRITERION ON POTENTIAL FOR BROAD-BASED ECONOMIC BENEFITS

If your initial proposal with detailed information addressing the scientific and technological merit selection criterion and preliminary information addressing the potential for broad-based economic benefits selection criterion is determined to have high merit, you will be requested to provide more detailed information to address the potential for broad-based economic benefits selection criterion. Please **do not** provide the detailed information below in your initial proposal submission. You will be notified by ATP if you are to submit the detailed information below, and given a reasonable time period to prepare your submission. **Although you are not required to provide the detailed information below with your initial proposal submission, you are strongly encouraged to begin preparing this information to ensure that sufficient time is allocated to finalize it and obtain required approval(s) within your organization to submit it to ATP when it is due**. This revised proposal submission process is designed to reduce the burden on our proposers.

FORMAT: If you are requested to provide the more detailed information to address the potential for broad-based economic benefits selection criterion, all of the proposal format requirements stipulated in Chapter 2 for the initial proposal also apply for the information required below with the exception of the page limit. For the information below, the page limit is **15** for a single company and **20** for a joint venture**.**

COVER SHEET: For single company proposers, pages 1 & 2 of the Form NIST-1262 (Single Company Advanced Technology Program Proposal Cover Sheet) and for joint venture proposers, pages 1 & 2 of the Form NIST-1263 (Joint Venture Advanced Technology Program Proposal Cover Sheet must be included with the detailed information below. The proposer should include the proposal number assigned by ATP at the time of the initial proposal submission in the top right hand box labeled "(FOR ATP USE ONY)." Please do not include any other cover sheet or letter with this submission.

Potential for Broad-Based Economic Benefits.

The mission of ATP is to fund research projects with strong potential for delivering large economic benefits to the nation, beyond the returns to the proposer. While ATP funds cannot be used for product development or for other commercialization activities, proposals must show how the research will lead to economic growth. To help ATP with this evaluation, we ask you to provide:

(National Economic Benefits)

1. A convincing case that large economic benefits to the U.S. will result from successful development of the technology, including benefits to the applicant, and more importantly, benefits to other organizations, users, industries, and the general public;

(Need for ATP Funding)

2. Evidence that these benefits would not occur in a timely manner to meet market opportunity in the absence of ATP funding; and

(Pathway to Economic Benefits)

3. A strong framework of a commercialization plan for achieving the benefits described in this plan needs to address the following elements:

    a. How you will bring your technology to the marketplace;
    b. The mechanisms by which the technology will be broadly diffused;
    c. Evidence that you have the necessary business experience and qualifications (or the ability to acquire them);
    d. A convincing case that you are committed to the R&D and ultimate commercialization; and
    e. An appropriate management plan and organizational structure for carrying out the tasks of the project and eventually commercializing the results.

Your plans for commercialization and diffusion provide the critical link between your R&D plan and the large economic benefits to the nation that would be enabled by your project. The following sections provide more detail on each of the above critical elements.

National Economic Benefits. In preparing this section, think about what business opportunities are being addressed by the technology you are proposing to develop and why they are of economic importance, not just to you but also to others in the nation. Consider how the successful pursuit of these opportunities will benefit your customers, end users, others in your industry -- even your competitors -- other industries, and the general public. You need to make a strong case for government use of taxpayer funds for the proposed research by demonstrating large benefits to the nation beyond those received by you, the proposer.

Think about opportunities in the immediate future and broader impacts in the more distant future, including those that are less tangible. Some of the economic benefits can be quantified; others present a greater challenge to define with precision. For example, you successfully develop a new technology through an ATP award that saves automobile owners an average of $200 per car per year on gasoline, but consumers may only be willing to pay $50 per year for such a feature. The difference of $150 per car per year is an example of an economic benefit to each automobile owner that can be readily quantified. This difference -- $150 multiplied by the estimated number of automobiles that will be using your technology -- is an example of benefits to the nation beyond what you will receive. Less easy to quantify might be the potential environmental impacts of a technology that leads to lower emissions of hazardous air pollutants. But you could still develop reasonable estimates using published information about the amount of emissions with current technologies, assessing the portion of these emissions that your technology can address, and identifying the percentage improvements enabled by your technology. More difficult to estimate might be the economic consequences of reduced dependence on imported oil. Quantification can be particularly elusive where the technology potentially enables entirely new markets to develop. In such a situation, provide evidence of the need for the products or capabilities enabled by your proposed project, a clear description of these capabilities and of changes that might come about in existing markets as a result of these capabilities, and whatever quantitative and qualitative measures are expected to illustrate impact.

Be clear in your discussion about the marginal difference that your technology makes. If possible, identify the "added value" of ATP's financial assistance in realizing the economic benefits of your proposed project. Research efforts take a number of years to complete and often include significant investments in additional

research and development subsequent to the ATP award –– and a number of additional years before the economic benefits you are describing are realized. Perhaps your company, or a competitor, will undertake a part of the research or achieve some part of the resulting capabilities without ATP funding. Thus, some portion of the economic benefits you have identified may be realized whether or not you receive an ATP award. Please state what they are. Indicate what aspects of the project, if any, will likely be undertaken without ATP funding, and with what timing. Assess the economic benefits with and without ATP funding.

There is no single "successful formula" for presenting the national economic benefits of ATP projects, but consider the following:

1. Does the project enable future economic activity because it is "pathbreaking" (opens up new and revolutionary possibilities), "infrastructural" (provides a foundation for an entire industry or supports the development of a broad set of technologies), or "multi-use" (has multiple and distinct applications)?

2. Does the project enable performance and quality gains and cost savings to your organization? To others? Does it offer health, safety, or environmental benefits?

3. Will your competitors benefit? Downstream customers and end users? Other industries? Other researchers?

4. Does the project have potential for synergy and complementarity with what others are doing?

5. Are there opportunities for others to use your technology for applications that you do not wish to pursue, but might be made available to them through patent licensing, publication, or some other mechanism? How will these organizations be made aware of these opportunities? Are these organizations participating in the project in some way?

In the **Pathway to Economic Benefits** section, you will be asked to link the economic benefits you have described here under **National Economic Benefits** to the plans and strategies you and/or others will employ to bring these economic benefits about.

Need for ATP Funding. Explain why your project needs public funds. Why is full private funding not available or not possible? If you are a small company, why are internal funds not devoted to this project, and what efforts have you made to seek external private financing? If you are a large company (that is, a business unit or division in a large company), explain why this project does not match the profile for internal R&D funding priority.

What makes this project special and deserving of public support? How does it differ from other projects in your company's R&D portfolio that are fully financed with private resources? If the project is "too risky" to obtain private funding, explain what about the project makes it too risky for your R&D portfolio. Be specific. If you think that your company cannot capture enough of the benefit or profit from this project to warrant the investment, explain why. Are there technology characteristics or business characteristics that make it difficult for the firm doing the R&D to capture the returns?

Pathway to Economic Benefits. If your R&D effort is successful, how will the technology be brought to market, or otherwise enter into use? Ultimately, by what pathways will your technology generate economic value and provide the large economic benefits described above to the nation?

Commercialization. The ATP expects that you, the proposer, will take a major role in introducing the technology into the marketplace rapidly through commercialization activities. You must demonstrate an understanding of the market; fairly assess your strengths, weaknesses, and opportunities from a competitive standpoint; and show that you have at least a preliminary business plan and strategy for introducing the technology into the marketplace.

Describe developments related to the competitiveness of your technology in the U.S. and abroad, and assess the window of opportunity for your technology. Is there an urgency in a market sense for the technology to be developed within the proposed timeframe of your ATP project? Who are your competitors, and what are they doing in this research area? How are competing technologies developing and progressing? Are you in the lead? Behind? Trying to catch up? Planning a leap-frog strategy? Will you get there in time? Will you be able to make a difference?

Present your commercialization strategy and demonstrate that you have a coherent business plan.
Identify potential commercial applications of your technology by which economic benefits described in the previous section will be achieved. Highlight which application(s) will be your primary focus. Provide a detailed description of your strategy for bringing this initial application(s) to market. Discuss the role of strategic alliances, marketing arrangements, plans for technology licensing, and your approach to intellectual property protection. Identify your most likely direct customers and pathway to the end users.

Discuss business or market risks that you expect to face, and describe your approach to managing those risks. Describe how varying degrees of technical success with regard to the R&D plan and how changing business conditions might affect your ability to commercialize the technology. The ATP recognizes that inability to achieve full technical success, as well as unanticipated developments in fast-moving markets, can change opportunities and alter plans. Discuss the possibility of adjustments to the commercialization plan in response to different or changing conditions.

It is important to emphasize that while ATP funding decisions are based in part on a consideration of the opportunities for commercial success, ATP funds are NOT to be used for commercialization activities. ATP funding is only provided for research and development activities.

Broader Diffusion. Consistent with its definition of economic benefits, ATP views the "pathway to economic benefits" as both the proposer's direct commercialization path to customers and subsequent customers downstream and more indirect paths to the full spectrum of potential economic benefits to the nation.

In addressing this broader set of pathways, consider how benefits of your technology will reach others outside the proposing organization(s) and your customers. How will your contributions to knowledge diffuse beyond your organization to benefit other researchers working on other research projects in the same or other industry sectors? Will you publish research results? Will you patent, whereby once

your patent is issued information in it becomes public? Will you seek licensing partners in other industries or for other applications than are of primary interest to you? Will you include user groups in your project teams? Will you form alliances with others in your supply chain, or with other firms in different industry sectors? Do you see potential for beneficial synergistic or complementary effects on others? Overall, what will you do to increase the likelihood that your technology will diffuse beyond your company or your industry, so that your technology will have the widest possible impact and greatest benefit to the economy?

Company's Commitment, Project's Organizational Structure, and Project Management. Describe your commitment to the project and subsequent commercialization. What resources are you bringing to the project? What priority will you give to this work in relation to other company activities? How does this project fit within the core competency of the organization? Why is this project strategically important for the company? Provide evidence of support from higher management within your company, if applicable. Provide evidence of interest and support from potential customers or suppliers, and evidence of support from current or future investors, if applicable. If you have commitments from a state, regional, or local agency that has agreed to contribute cost sharing funds, please indicate the nature of that arrangement and give evidence of the commitment. **For joint ventures, letters of commitment (or excerpts of such letters) verifying the availability of cost sharing funds must be submitted from all participants of the joint venture**.

Describe the organizational structure for your project. Describe how R&D staff, management, and manufacturing/product development/commercialization staff will support an integrated R&D and business plan. Identify known weaknesses in organizational structure and how they will be overcome.

Describe the project management plan. Describe responsibilities and reporting relationships. Identify who is responsible for major technical tasks and major commercialization activities. Does the project manager have sufficient authority to carry out the project? Is the management structure sufficiently robust that the project can be completed even if key personnel changes are necessary? Who in senior management is interested in this project?

If you are applying as a joint venture, address the following questions: Why was the joint venture structured this way? Why did these particular companies come together? What is the role of each participant and why is it important? Do the participants possess all of the required skills to complete the proposed work? How will each participant focus independently on commercial activities?

For joint ventures, indicate the extent of participation by small businesses and describe their importance to the project. Joint ventures should aim where appropriate to include companies of diverse size, including smaller companies, and possibly other organizations, such as universities and national laboratories.

For large company single proposers, indicate the extent to which subcontractor teaming arrangements are an important feature of the project. Explain how subcontractor relationships with universities, national laboratories, smaller companies, or others may increase the likelihood of public benefits.

For all proposers, identify subcontractor/supplier/collaborator relationships, and describe their importance to the success of the project. Note that ATP recipients are expected to use subcontractors/suppliers/collaborators located in the United States to the greatest extent possible. Substantial

foreign participation without credible justification is discouraged. If foreign participants are proposed, the proposer should explain why U.S. sources are not appropriate in view of project goals and how the foreign participants selected maximize U.S. economic benefit.

Experience and Qualifications. Describe the quality and appropriateness of technical and business staff assigned to the project, and the amount of time each individual will allocate to the project. Briefly highlight education and experience of key personnel. (Present a summary table with two columns specifying for each person: 1) name, project responsibility, and percent time allocation to the project; and 2) education, and relevant experience.)

Discuss relevant past performance of project participant organizations. Describe previous company accomplishments in commercialization of technology. Describe other unique characteristics or capabilities of participant organizations.

Describe the adequacy of company facilities and equipment, and other technical or administrative resources, including relevant resources of all project participants, subcontractors, and other collaborators. If facilities or equipment required for the project are not owned or controlled by the proposing organizations, describe what arrangements have been made to ensure adequate facilities and equipment.

If your company is less than 10 years old, state the year in which your company was formed, and provide a brief company history. For joint-venture proposals, state the year(s) of formation of any principal company less than 10 years old; also indicate whether the joint venture has formed with the purpose of proposing to ATP, or if it is a previously existing joint venture.

List significant Federal R&D awards (if any) within the past five years in the same general technical area. Briefly describe the work and your accomplishments and note the agency and responsible Principal Investigator and Federal project manager. Explain how this research relates to the work proposed to ATP.

List previous ATP awards or other proposals currently pending ATP review. Be sure to complete blocks 4.A. and 4.B. on the Form NIST-1262 or NIST-1263. If you have received a previous ATP award in a closely related technical area, describe how your current proposed project differs from the previously awarded project. ATP will not fund an extension of a previous project, so the newly proposed project must be substantially different from the previously funded project.

Provide information about the current ownership of your company and the past history and performance of your organization(s). Present a table as illustrated below, with data for the preceding three years (or for the number of years the organization has existed, if less than three years).

Financial and Employment Information

	Year *T-3*	Year *T-2*	Year *T-1*
Income Statement			
Revenue			
Cost of Sales (Cost of Goods Sold)			
R&D Expenditures			
Net Income Before Taxes			

Net Income			
Balance Sheet			
Total Assets			
Total Liabilities			
Net Worth (Owner's Equity)			
Employment Information			
Total Number of Full-time Employees			
Total Number of Part-time Employees			
Total Number of Full-time R&D Personnel			
Total Number of Part-time R&D Personnel			

Large companies with multiple divisions or business units may provide financial and employment information for the fully consolidated company. Clearly identify the entity to which the information applies. Include an organization chart or equivalent explanation indicating the position of the project proposer/participant within the larger company to which the financial and employment information applies.